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Climate Sciences Department of Earth Sciences Division

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Education

Ph. D. and M.Phil. Atmospheric Science, City University of New York (CUNY), 2008-2013

Thesis: Numerical study of canopy flow in complex terrain

Advisor: Chuixiang Yi

Ph. D. Candidate in Climatology, Nanjing University of Information Science and Technology; Institute of Geographic Sciences and Natural Resources Research, CAS, China, 2004 -2008 (Passed Candidacy then Transferred to CUNY)

Advisor: Qilong Miao and Shaoqiang Wang

B.E. Electronic Information Engineering, Nanjing University of Information Science and Technology, China, 2000-2004

Experiences

Postdoctoral Fellow, Jan. 2014-present, Lawrence Berkeley National Laboratory

Supervisor: William J. Riley and Charles D. Koven

- Community Land Model (CLM) diagnosis and validation
- Carbon cycle and climate variability in high latitude

Graduate Research Assistant, Aug. 2008-Dec. 2013, Research Foundation of City University of New York.

- Numerical study of fluid dynamics and associated CO₂ transport in complex terrain covered by vegetation
- Data analysis of climate control and influence of extreme weather on ecosystem productivity

Teaching Assistant and Adjunct Lecturer, Aug. 2008-Dec. 2013, Queens College, City University of New York.

- Teaching the lab section of an introductory college level Environmental Sciences course which includes a short lecture and lab instruction

Guest Graduate Student, Jan. 2007-Aug. 2008, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences.

- Theoretical and numerical study of energy transfer within vegetation canopy and its parameterization in Weather Research and Forecasting (WRF) Model

Guest Graduate Student, Nov. 2005-Aug. 2006, Nanjing Institute of Environmental Science, State Environmental protection Administration of China.

- Using GIS and Remote Sensing tools to do environmental and ecological impact assessment
- Standardization of forest ecosystem quality assessment

Technical Skills

Fortran, C, Matlab, GrADS, ENVI, ERDAS, ArcGIS, Community Earth System Model (CESM), Weather Research and Forecasting (WRF) model, Computer Aided Design (CAD), Computational Fluid Dynamics (CFD) model

Publications

In review

Xu, X., C. Yi, Stably Stratified Sub-canopy Flow in Complex Terrain (In review)

Xu, X., C. Yi, L. Montagnani, Canopy flow and CO₂ transport in an alpine forest (In review).

Published

Xu, X., C. Yi, The Influence of Geometry on Recirculation and CO₂ Transport over Forested Hills. *Meteorology and Atmospheric Physics*, 2013, DOI 10.1007/s00703-012-0224-6.

Yi, C., G. Rustic, X. Xu, J. Wang, A. Dookie, S. Wei, G. Hendrey, D. Ricciuto, T. Meyers, Z. Nagy, K. Pinter, Climate extremes and grassland potential productivity. *Environmental Research Letters*, 2012, doi:10.1088/1748-9326/7/3/035703.

Yi, C., D. Ricciuto, R. Li, J. Wolbeck, X. Xu, et al., Climate control of terrestrial carbon exchange across biomes and continents. *Environmental Research Letters*, 2010, 5, doi: 10.1088/1748-9326/5/3/034007.

Bao, Y., J. Xie, Y. Xiang, X. Xu, Y. Liu, Influence of Low-level Jets on the great events of BPH's migration northward in China. *ACTA ECOLOGICA SINICA*. 2009, 29(11): 5773-5782. (In Chinese)

Bao, Y., X. Xu, J. Wang, C. Wang, Q. Miao, B. Zhai, Analysis of the atmospheric dynamical backgrounds for the great immigration events of white back planthopper (*Sogatella furcifera*). *ACTA ECOLOGICA SINICA*. 2007, 27(11): 4527-4535. (In Chinese)

Presentations

Xu, X., W. J. Riley, C. Koven, C. Miller, K. McDonald, Diagnosing terrestrial ecosystem methane dynamics in CLM, 19th Annual CESM Workshop, June 16-19, Breckenridge, Colorado, 2014.

Yi, C., E. Kutter, X. Xu, Modeling and measuring turbulent recirculation bubbles over complex terrain: mixing mechanisms for forest-atmosphere exchange, 21st Symposium on Boundary Layers and Turbulence, June 9 -13, Leeds, United Kingdom, 2014.

Xu, X., C. Yi, L. Montagnani, Three-dimensional modeling of canopy flow in complex terrain, American Geophysical Union, Fall Meeting 2013, December 9-13, San Francisco, CA, 2013

Xu, X., C. Yi, L. Ye, Canopy flow in complex terrain, Black Rock Forest symposium, 17 June, Newburgh, NY, 2013.

Xu, X., C. Yi, Mechanistic Analysis of Thermo-topographic Flows in Forested Terrain, AMS 30th Agricultural and Forest Meteorology/First Atmospheric Biogeosciences Conference, 29 May – 1 June, Boston, MA, 2012.

Xu, X., C. Yi, Airflow and CO₂ transport over double forested hills, Fall meeting of the American Geophysical Union, December 5-9, San Francisco, CA, 2011.

Yi, C., X. Xu, New microstructures of stably stratified sub-canopy flows over complex terrain, Fall meeting of the American Geophysical Union, December 5-9, San Francisco, CA, 2011.

Yi, C., X. Xu, How does the geometry of complex terrain affect land-atmosphere exchanges? 3rd iLEAPS Science Conference, September 18-23, Garmisch-Partenkirchen, Germany, 2011.

Xu, X., C. Yi, Advective fluxes in complex terrain, 2011 Carbon Cycle and Climate Conference and 3rd Beijing International Summer School (BISS) on Climate and Environment, August 1-5, Beijing, 2011.

Xu, X., C. Yi, Complex canopy flows and advection model development, 2009 Ameriflux Principal Investigator Workshop, September 20-23, Washington DC, 2009.

Honors and Awards

- World Meteorological Organization, The Norbert Gerbier-MUMM International Award 2012, one of the six major contributing authors among the 151 total authors.

- American Meteorological Society 30th Agricultural and Forrester Meteorology/First Atmospheric Biogeosciences Conference Commendable Oral Presentation Award 2012.
- Graduate Center, CUNY, Tuition Award 2008-2013.
- Queens College, CUNY, Edward Schreiber Memorial award 2011.
- Graduate Center, CUNY, Conference Presentation Support for Ph.D. Students 2011.
- Graduate Center, CUNY, Doctoral Student Research Grant Program Competition #5 2010.
- Graduate Center, CUNY, Sue Rosenberg Zalk Student Travel and Research Fund & Ph.D. Alumni Association Dissertation Support Fund Award 2009.
- Graduate Center, CUNY, Science Fellowship 2008-2010.

Invited Seminar

- September 21, 2010 'Terrestrial ecosystem Green House Gas', Queens College, City University of New York.
- August 12, 2013 'Canopy flow in complex terrain', Earth Sciences Division, Lawrence Berkeley National Laboratory.

Professional Service

Active Reviewer for

- Advances in Atmospheric Sciences
- Agricultural and Forest Meteorology
- Asia-Pacific Journal of Atmospheric Sciences
- Boundary Layer Meteorology
- Journal of Advances in Modeling Earth Systems
- Journal of Applied Meteorology and Climatology